

RELATED APPLICATION

This application is a Continuation of Continuation of Reissue Application, U.S. Serial No. 08/880,748, Filed: 6-23-97, a Continuation of Reissue Application, U.S. Serial No. 08/369,910, Filed: 1-9-95.

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GOLF CLUB HEAD WITH INCREASED RADIUS OF GYRATION AND FACE REINFORCEMENT

BACKGROUND OF THE INVENTION

Investment casting techniques innovated in the late 1960s have revolutionized the design, construction and performance of golf clubheads up to the present time. Initially only novelty putters and irons were investment cast, and it was only until the early years of the 1980s that investment cast metal woods achieved any degree of commercial success. The initial iron clubheads that were investment cast in the very late 1960s and early 1970s innovated the cavity backed clubheads made possible by investment casting which enabled the mold and tool designer to form rather severe surface changes in the tooling that were not possible in prior manufacturing techniques for irons which were predominantly at that time forgings. The forging technology was expensive because of the repetition of forging impacts and the necessity for progressive tooling that rendered the forging process considerably more expensive than the investment casting process and that distinction is true today although there have been recent techniques in forging technology to increase the severity of surface contours albeit at considerable expense.

The investment casting process, sometimes known as the lost wax process, permits the casting of complex shapes found beneficial in golf club technology, because the ceramic material of the mold is formed by dipping a wax master impression repeatedly into a ceramic slurry with drying periods in-between and with a silica coating that permits undercutting and abrupt surface changes almost without limitation since the wax is melted from the interior of the ceramic mold after complete hardening.

This process was adopted in the 1980s to manufacture "wooden" clubheads and was found particularly successful because the construction of these heads requires interior undercuts and thin walls because of their stainless steel construction. The metal wood clubhead, in order to conform to commonly acceptable clubhead weights on the order of 195 to 210 grams when constructed of stainless steel, must have extremely thin wall thicknesses on the order of 0.020 to 0.070 inches on the perimeter walls to a maximum of 0.125 inches on the forward wall which is the ball striking surface. This ball striking surface, even utilizing a high strength stainless steel such as 17-4, without reinforcement, must have a thickness of at least 0.125 inches to maintain its structural integrity for the high clubhead speed player of today who not uncommonly has speeds in the range of 100 to 150 feet per second at ball impact.

Faced with this dilemma of manufacturing a club-head of adequate strength while maintaining the weight of the head, the designers of the new club heads had to find a way to make the club head stronger without adding weight.

the clubhead in a driving metal wood in the range of 195 to 210 grams, designers have found it difficult to increase the perimeter weighting effect of the clubhead.

In an iron club, perimeter weighting is an easier task because for a given swing weight, iron clubheads can be considerably heavier than metal woods because the iron shafts are shorter. So attempts to increase perimeter weighting over the past decade has been more successful in irons than "wooden" clubheads. Since the innovation of investment casting in iron technology in the late 1960s, this technique has been utilized to increase the perimeter weighting of the clubhead or more particu-

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE: Continuation of Continuation of
Reissue Application, U.S. Serial No.
08/880,748, Filed: 6-23-97,
a Continuation of Reissue Application,
U.S. Serial No. 08/369,910, Filed: 1-9-95
of Dillis V. Allen
INVENTOR: Dillis V. Allen
PATENT NO: 5,301,941
ISSUED: April 12, 1994
FOR: IMPROVED GOLF CLUB HEAD WITH INCREASED
RADIUS OF GYRATION AND FACE REINFORCEMENT

REISSUE CONTINUATION
SERIAL NO: 09/378,131
FILED: 8-20-99
EXAMINER:
ART UNIT:

U.S. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

ASSIGNEE'S STATEMENT UNDER 37 CFR 3.73

Honorable Sir:

In accordance with the provisions of 37 CFR 3.73,
the assignee of the present application, Vardon Golf Com-
pany, Inc., hereby establishes its ownership to the satis-
faction of the Commissioner by submitting to the Office
documentary evidence of a chain of title from the original
owner to the assignee in the form of a copy of an executed
Assignment from the inventor of U.S. application Serial No.
07/882,561, Filed: May 13, 1992, entitled IMPROVED GOLF CLUB
HEAD WITH INCREASED RADIUS OF GYRATION AND FACE REINFORCE-
MENT, now U.S. Patent No. 5,301,941, Issued: April 12, 1994,
to Vardon Golf Company, Inc., recorded on Reel No. 6176,
Frame No. 0346, and an original Assignment of Reissue ap-
plication U.S. Serial No. 08/369,910, Filed: 1-9-95. en-

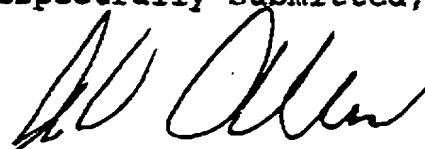
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titled IMPROVED GOLF CLUB HEAD WITH INCREASED RADIUS OF
GYRATION AND FACE REINFORCEMENT; Reissue Continuation ap-
plication U.S. Serial No. 08/880,748, Filed: 6-23-97, en-

08/880,748-000000

titled IMPROVED GOLF CLUB HEAD WITH INCREASED RADIUS OF
GYRATION AND FACE REINFORCEMENT; and a Continuation of Con-
tinuation of Reissue application, U.S. Serial No.
09/378,131, Filed: 8-20-99, entitled IMPROVED GOLF CLUB HEAD
WITH INCREASED RADIUS OF GYRATION AND FACE REINFORCEMENT.

Respectfully submitted,

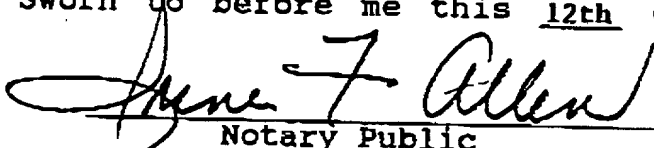

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STATE OF ILLINOIS)
COUNTY OF COOK)

Subscribed and Sworn to before me this 12th day of
January, 2000.

(SEAL)


Notary Public
My commission expires 10-18-01



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